



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,658	02/09/2004	Xiaofeng Zhang	2855/110/286 SM04-004	1442
28112	7590	08/23/2010		
SAILE ACKERMAN LLC 28 DAVIS AVENUE POUGHKEEPSIE, NY 12603			EXAMINER YOUNG, WAYNE R	
			ART UNIT 2627	PAPER NUMBER
			MAIL DATE 08/23/2010	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

*Ex parte* XIAOFENG ZHANG, ZHU FENG, ELLIS T. CHA, and YEN FU

---

Appeal 2009-004146  
Application 10/775,658<sup>1</sup>  
Technology Center 2600

---

Before JOSEPH E. RUGGIERO, MARC S. HOFF, and THOMAS S.  
HAHN, *Administrative Patent Judges*.

HOFF, *Administrative Patent Judge*.

DECISION ON APPEAL<sup>2</sup>

---

<sup>1</sup> The real party in interest is SAE Magnetics (H.K.) Ltd.

<sup>2</sup> The two-month time period for filing an appeal or commencing a civil action, as recited in 37 C.F.R. § 1.304, or filing a request for rehearing, as recited in 37 C.F.R. § 41.52, begins to run from the “MAIL DATE” (paper delivery mode) or the “NOTIFICATION DATE” (electronic delivery mode) shown on the PTOL-90A cover letter attached to this decision.

## STATEMENT OF CASE

Appellants appeal under 35 U.S.C. § 134(a) from a Final Rejection of claims 1-6 and 8-17.<sup>3</sup> We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

Appellants' invention concerns a method and apparatus for measuring current in hard disk drives. Electrical current is measured at the interface between the magnetic head slider and the magnetic medium (¶ 0018). A current measurement apparatus such as a picoammeter is provided, to provide an accurate assessment of slider/disk contact events (¶ 0018, 0028).

Claim 1 is exemplary of the claims on appeal:

1. An apparatus, comprising:  
a current measurement device;  
a head gimbal assembly including a head to at least one of read and write information signals from/to a moving storage medium, said current measurement device electrically coupled to said head and said storage medium; and  
said current measurement device is to measure current between said head and said storage medium wherein said current measurement device is an ammeter/voltage source.

The Examiner relies upon the following prior art in rejecting the claims on appeal:

Frater	US 4,479,090	Oct. 23, 1984
Muranushi	US 5,153,785	Oct. 6, 1992

Claims 1-5, 8-11, 13-15, and 17 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Muranushi.

Claim 16 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Frater.

---

<sup>3</sup> Claim 7 has been cancelled.

Claims 6 and 12 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Muranushi in view of Frater.

Throughout this decision, we make reference to the Appeal Brief (“App. Br.,” filed April 14, 2008), the Reply Brief (“Reply Br.,” filed August 11, 2008) and the Examiner’s Answer (“Ans.,” mailed June 9, 2008) for their respective details.

### ISSUES

With respect to the § 102 rejection over Muranushi, Appellants argue that Muranushi cannot anticipate the claimed invention because current measurement device 4 is separate and distinct from voltage source 5 (App. Br. 6).

With respect to the § 102 rejection over Frater, Appellants argue that the Examiner’s rejection is erroneous because the Examiner failed to identify any element(s) corresponding to the claimed “ammeter/voltage source” (App. Br. 7).

Appellants’ contentions present us with the following issues:

1. Does Muranushi teach a current measurement device comprising an ammeter/voltage source?
2. Does Frater teach a current measurement device comprising an ammeter/voltage source?

### FINDINGS OF FACT

The following Findings of Fact (FF) are shown by a preponderance of the evidence.

*The Invention*

1. Drawing Figure 3 separately illustrates ammeter 309 and voltage source 311 (Fig. 3).
2. Appellants' Specification discloses that a Keithley Instruments model 6487 picoammeter/voltage source may be used as the current measuring device (§ 0025).

*Muranushi*

3. Muranushi teaches a current measuring device including an ammeter 4 and a voltage source 5 (Fig. 7).

*Frater*

4. Frater Fig. 1A is a representation of the generation of triboelectric charges by intermittent contact between a magnetic head in a slider assembly and the surface of a magnetic recording disk (col. 2, ll. 23-27). The equivalent circuit of this arrangement is shown in Fig. 1B, where the triboelectric potential represented by battery E causes a triboelectric current  $i$  to flow into a resistance R, the charge being the time integral of current  $i$  between the limits of  $t_1$  and  $t_2$ , being measurable in an integrating ammeter A (col. 2, ll. 53-58).

PRINCIPLES OF LAW

Analysis of whether a claim is patentable over the prior art under 35 U.S.C. § 102 begins with a determination of the scope of the claim. We determine the scope of the claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction in light of the specification as it would be interpreted by one of ordinary skill in the art. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359,

1364 (Fed. Cir. 2004). The properly interpreted claim must then be compared with the prior art.

## ANALYSIS

### CLAIMS 1-5, 8-11, 13-15, AND 17

We select claim 1 as representative of this group of claims, pursuant to our authority under 37 C.F.R. § 41.37(c)(1)(vii).

We are not persuaded by Appellants' argument *supra* that the Examiner erred.

Appellants' argument that Muranushi does not teach the claimed "ammeter/voltage source" is based on the premise that the claimed element must be a unitary item (see App. Br. 6). Appellants' premise is undermined by Figure 3 of the application's drawings, which separately illustrate ammeter 309 and voltage source 311 (FF 1). Furthermore, the section of the Specification cited by Appellants as supporting the claimed ammeter/voltage source discloses that a Keithley Instruments model 6487 picoammeter/voltage source may be used (FF 2). Page 2 of the Keithley 6487 data sheet<sup>4</sup> illustrates the device as including a discrete picoammeter and a discrete voltage source.

The Examiner construed representative claim 1 to require an ammeter in combination with a voltage source. The Examiner found, and we agree, that Muranushi's current measuring device 4 in combination with voltage source 5 meets the claimed "current measuring device [being an] ammeter/voltage source" (Ans. 6; FF 3).

---

<sup>4</sup> <http://www.keithley.com/data?asset=10756>, retrieved August 11, 2010.

Appellants have not established that the Examiner erred in rejecting representative claim 1. Accordingly, we will sustain the Examiner's § 102 rejection of claims 1-5, 8-11, 13-15, and 17.

#### CLAIM 16

We are not persuaded by Appellants' arguments, *supra*, that the Examiner erred in rejecting claim 16. First, we note that the Examiner does point to ammeter A as corresponding to the "current measurement device" recited in claim 16 (Ans. 5). Second, Frater Fig. 1A is a representation of the generation of triboelectric charges by intermittent contact between a magnetic head in a slider assembly and the surface of a magnetic recording disk (FF 4). The equivalent circuit of this arrangement is shown in Fig. 1B, where the triboelectric potential represented by battery E causes a triboelectric current  $i$  to flow into a resistance R, the charge being the time integral of current  $i$  between the limits of  $t_1$  and  $t_2$ , being measurable in an integrating ammeter A (FF 4). We find that equivalent circuit battery E and integrating ammeter A, taken together, correspond to the claimed ammeter/voltage source. Therefore, we find that Frater teaches all the limitations of claim 16.

Appellant has not shown error in the Examiner's rejection of claim 16; thus, we sustain its rejection under § 102.

#### CLAIMS 6 AND 12

Appellants do not present separate argument for the patentability of claims 6 and 12, stating only that Fraser [*sic*, Frater] fails to make up for the deficiencies of Muranushi with respect to claim 1 (App. Br. 7). Because we find *supra* that the Examiner did not err in rejecting claim 1 as being anticipated by Muranushi, we will sustain the § 103 rejection of claims 6 and

12 for the same reasons expressed *supra* with respect to the § 102 rejection of claim 1.

### CONCLUSIONS

1. Muranushi teaches a current measurement device comprising an ammeter/voltage source.

2. Frater teaches a current measurement device comprising an ammeter/voltage source.

### ORDER

The Examiner's rejection of claims 1-6 and 8-17 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).



Appeal 2009-004146  
Application 10/775,658

AFFIRMED

ELD

SAILE ACKERMAN LLC  
28 DAVIS AVENUE  
POUGHKEEPSIE, NY 12603